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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
RISK REDUCTION ENGINEERING LABORATORY
CINCINNATI, OHIO 45268

DATE: November 22, 1994

SUBJECT: Air Sparging/SVE Pilot Study
NCR Superfund Site, Millsboro, DE

FROM: Michelle Simon
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TO: Debra Rossi, RPM
DE/MD Section (3HW42)

I have reviewed the Proposal for Pilot-scale Test Studies from Terra Vac to Mr. Joseph M. Califf of Environmental Strategies Corporation dated October 17, 1994 and have the following observation and comments.

1. The October 17, 1994 letter outlines four proposed tasks:
   Task One - Design and Work Plan Preparation
   Task Two - Equipment Procurement, Mobilization and Installation
   Task Three - Start-Up and Operations
   Task Four - Reporting

Terra Vac proposes to provide very specific recommendations for the design parameters for a full scale remediation. They intend to provide the spacing and depths for the AS and SVE wells, expected air flow rates for injection and extraction, and contaminant concentration rates for the design of an air emission control system. Their proposal seems logical and achievable on the whole, what is missing are some specifics on the pilot test. If the Region decides to pursue a AS/SVE pilot, Terra Vac should provide the following details under Task One of their proposal.

1. Exact location of the proposed AS/SVE site. In the first paragraph under Section **3.0 PROCESS DESCRIPTIONS** on page 2, the proposal states that the pilot system will be placed "west of monitoring well W32B in the eastern portion of the site." Figure 2 illustrates a proposed site **north** of W32B. If Figure 3 correctly illustrates the proposed site, why was it chosen for the pilot? It is an average location for contamination and permeability, the most optimistic or pessimistic? Terra Vac should document their rationale for choosing the exact location for the pilot.

2. 2.2.3 Monitoring Points. On page 5 of the proposal Terra Vac states that specially designed probes will be installed to determine the extent of the zone aeration. Under Section 4.2, page 6, they give some details concerning these probes: 1/2-inch steel pipe with 1/8-inch holes even spaced at 90 degrees along the

bottom of the driven to respective depths via vibrating hammer. Terra Vac should document the precise depths for the monitoring points.

It is assumed that the aquifer is unconfined. The proposal states that monitoring points will be in the vadose zone above, shallow and deep within the aquifer. This will help prove that the aquifer is unconfined in fact, as well as assist in determining vertical inhomogeneity.

The proposed AS well will be screened from 33 to 38 feet below ground surface (bgs). The top of the aquifer appears 12 feet bgs and 75 feet thick. Should AS be investigated for deeper aquifer depths?

The hydraulic permeability appears to be high: ±100 ft/day, transmissibility 7000-7700 ft^2/day. Terra Vac plans to plan monitoring points 5, 10, 20 and 30 feet from the AS well. The locations should be justified by estimates of radii of influence based on experience or modelling of similar sites. The VE wells can help determine areal nonhomogeneity from the AS well.

3. 4.3 Task Three - Start-up and Operations. Terra Vac intends to operate the system for five days or until the VPGAC is exhausted, whichever comes first. It recommended to run a in situ pilot for as long as possible to determine changes in contaminant extraction rates, air flow rates, and radius of influence of a sparging or extractions well. Has Terra Vac considered operating the system longer than five days or operating the system at different vacuum levels and flow rates? Terra Vac should document their rationale for pilot design times and conditions.

Terra Vac should also specify the test methods and sampling frequency for the measurements listed on pages 7 and 8. Hopefully, Terra Vac may find that vacuum influence can be observed at some of the other surrounding monitoring wells in addition to W33A and W33B.

It is recommended that the proposed field GC and any other real time analyses be available through the course of the pilot whenever feasible. The proposed analytical methods should be documented under Task One.

4. 4.4 Reporting. The final report should contain all the elements listed on page 9 as well as geological or other field observations that are noted. Thorough explanations should be given for any conclusions or recommendations given.